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given as follows, beginning on Tuesday evening, October 25th, at half past seven o'clock: —

By Professor Joseph Lovering, What is Matter?

By Professor Joseph Lovering, What are Bodies?

By Charles Jackson, Jr., Esq., History of the Useful Arts.

By Professor H. L. Eustis, The Britannia Bridge.

By Professor J. P. Cooke, Light.

By Professor A. Guyot, Psychological and Physical Characters of the Nations of Europe, compared with those of the American People.

By Professor A. Guyot, The same subject continued.

By Professor Asa Gray, The Relation of Plants to the Sun.

By Professor Asa Gray, The same subject continued.

By Dr. A. A. Gould, Aquatic Life.

By Professor Joel Parker, The Science of the Law.

By Professor H. D. Rogers, The Arctic Regions.

Mr. Folsom proposed a plan for printing the additions to the library, as they accrue, with a small form of type and a hand-press, and pointed out its advantages; the subject was referred to a committee, consisting of the Librarian, Mr. Folsom, and Dr. Gray.

Professor Horsford made a communication upon a mode of rendering gutta percha elastic by the action of sulphur and oxide of lead, so as to render it useful as a substitute for india-rubber for car springs and other purposes where elasticity is required, — an important desideratum, on account of the increased price of india-rubber. He had succeeded in his endeavor, but the substance was not equal in value to vulcanized india-rubber. Specimens of gutta percha thus prepared, with various degrees of elasticity, were exhibited.

Three hundred and ninety-fourth meeting.

February 14, 1854. — SEMI-MONTHLY MEETING.

The PRESIDENT in the chair.

The Academy met at the house of Professor Treadwell, in Cambridge.

The Corresponding Secretary acted as Secretary, and read the record of the proceedings of the last meeting.

Dr. J. Wyman exhibited to the Academy a dissection of the brain, nerves, and electric organs of the *Torpedo occidentalis*, Storer, which is occasionally captured at Provincetown, Cape Cod, and adjoining localities, during the month of November. As regards its anatomical structure, it does not differ materially from the European species. Dr. Wyman estimated the number of plates or laminæ composing the two batteries at between 250,000 and 300,000; the number of prisms was about thirty-six to the square inch. He was able to trace the minute structure of the laminæ with the microscope, and found the ultimate distribution of the nerves to be the same as described by Wagner. Each ultimate nerve-fibre on reaching the lamina divides into a series of branches, which unite and form a complete capillary network over the surface of the plate; but from these branches others are given off, into which the "white substance" of Schwann does not enter. These last branches also divide; but at the point of division a large nucleated cell is generally found; and the fibres proceeding from this terminate in exceedingly slender, minute points, which seem to be lost on the general surface of the plate.

Professor Horsford read a paper by his pupil, Mr. Dean, embodying the results of a series of experiments on the nutritive value of various amylaceous articles of food, estimated from the percentage of nitrogen they respectively contain. Some remarks were made upon this by the President and Dr. Gray.

Professor Horsford also exhibited specimens of the ferruginous incrustation of the Cochituate water-pipes, which in some places had occurred to such extent as to diminish their calibre by one sixth, and the flow of water as much as twenty per cent. He thought the incrustation did not proceed now at so large a rate as at first. The President, Mr. Treadwell, and Mr. Charles Jackson, Jr. made various inquiries; but the reason why some pipes were more acted upon than others was not elicited.

Dr. Gray exhibited specimens of a *Spongilla* taken from the Cochituate water-pipes, in which, at some places, especially where there is no rapid flow, this production is said to form with great rapidity.

Three hundred and ninety-fifth meeting.

February 28, 1854. — SEMI-MONTHLY MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary acted as Recording Secretary, and read the record of the proceedings of the preceding meeting.

Professor Cooke submitted a memoir upon a subject which he had brought before the Academy at a former meeting, viz. "The Numerical Relation between the Atomic Weights, with some Thoughts on the Classification of the Chemical Elements." This was illustrated by a new classification of the elements in natural groups.

Dr. W. F. Channing stated that he had recently assisted in measuring the electricity evolved by two large magneto-electric machines constructed in Providence. These consisted essentially of armatures with inducing coils revolving before magnets. The amount of electricity evolved by the smaller machine was equal in quantity and intensity to that from a series of fifteen Grove's cups in full action. The amount of electricity evolved from the larger machine was equal to that from one hundred and forty-four Grove's cups, arranged two abreast in a series of seventy-two. The interesting fact here is, that galvanic electricity may be obtained from the magneto-electric machine for practical purposes, in greater quantity and at less cost than from the galvanic battery.

Professor Cooke communicated the fact, that an alloy of zinc, with a small quantity of antimony, after having been acted